

XIX.—*Further Notes on Cutiterebra: On the Identity of certain Species described by the late Bracy Clark.* By E. E. AUSTEN, Zoological Department, British Museum.

Cutiterebra atrox, Clark.

In the May number of this Magazine (Ann. & Mag. Nat. Hist. ser. 6, vol. xv. p. 378) I suggested that a species of *Cutiterebra* from Trinidad, which I there described as *C. funebris*, sp. n., might after all prove to be identical with *C. atrox*, Clk., from Mexico. At that time I had seen neither Clark's type nor his original description, and consequently was unable to express a final opinion upon the question. By the courtesy of Prof. Poulton, however, I have recently received for examination from the Oxford University Museum the type of *C. atrox*, as well as that of *C. detrudator*, Clk., besides a copy of Clark's "Addenda 1848," in which these two species are described. A glance at the type of *C. atrox*, Clk., was sufficient to show that this species is altogether distinct from my *C. funebris*, while a moment's further study proved that *C. atrox*, Clk., is identical with *C. terrisona*, Walk. Of the five triangular spots of yellow pollen which I described (*loc. cit.* p. 382) as resting on the inner margin of each eye in the type of the latter species, the two lowermost are alone present in the case of Clark's type, while the upper of the two, corresponding to the longest in the case of *C. terrisona*, is here reduced to a small triangular point, and the lower one, resting on the inferior angle of the eye, is also diminished in size. Another minor difference is that the oval spot of yellow pollen surrounding the extremity of the vertical fissura frontalis on each side in *C. terrisona* is wanting in the type of *C. atrox*. The type of the latter, however, is apparently a male, while that of *terrisona* is a female; so that if the smaller number of pollinose spots on the face and checks of *C. atrox* is not due to denudation, the differences in question are in all probability sexual, just as we find that in the case of *C. americana*, F., the jagged yellow pollinose border present on the checks in the female is absent in the male. Clark's type is in an excellent state of preservation and much cleaner than Walker's specimen; so that the narrow yellowish pollinose margins to the abdominal segments, which I mentioned in my notes on the type of *terrisona*, are here much more conspicuous. On the fifth segment the irregular pollinose markings have collected to form a jagged transverse band on the front margin. On the pleuræ, in front of and

parallel with the narrow oblique tuft of yellow pile before the base of the wings, the type of *atrox* shows a broader bare mark covered with yellowish pollen; this is also visible in the type of *terrisona*, and again, though faintly, owing to the bad state of preservation, in the 'Biologia' specimen which I referred to that species in my former paper. In the latter specimen, by the way, which is apparently also a male, three triangular flecks of yellow pollen are faintly visible, resting on the lower part of the inner margin of each eye. The dimensions of the type of *C. atrox*, Clk., agree very closely with those given in my previous paper (p. 382) for the type of *C. terrisona*, Walk.; the vertex, however, is slightly narrower. Since *C. atrox* was described in 1848, while the description of *C. terrisona* was not published until the following year, Clark's name has the priority. The synonymy will therefore run as follows:—

Cutiterebra atrox, Clk.

Cuterebra atrox, Clark, Addenda 1848, fig. 5; Brauer, Monographie der Cestrinen, pp. 241, 242 (1863).

Cuterebra terrisona, Walker, List Dipt. Ins. in Coll. British Museum, iii. p. 683 (1849); Brauer, Monographie der Cestrinen, pp. 244, 245 (1863); Austen, Ann. & Mag. Nat. Hist. ser. 6, vol. xv. pp. 382, 383 (1895) [*Cutiterebra*].

Cuterebra approximata, v. d. Wulp, p. p. (nec Walk.), Biol. Centr.-Am., Diptera, vol. ii. p. 2 (1883).

On comparing the types of *Cutiterebra atrox*, Clk., *C. approximata*, Walk., and *C. funebris*, Austen, I find it possible to tabulate the specific differences as follows:—

Black species (abdomen metallic, either plum-purple or greenish black), clothed with black hair, either entirely or with the exception of a tuft of yellow pile on the pleuræ.

- I. Pleuræ with narrow oblique tuft of yellow pile in front of base of wings; margins of abdominal segments narrowly yellowish pollinose. *atrox*, Clk.
- II. Pleuræ clothed entirely with black pile; margins of abdominal segments not yellowish pollinose.
 - a. Abdomen greenish black; a round shining black tubercle on each cheek; tarsi very broad: large species *funebris*, Austen.
 - b. Abdomen dark violet or plum-purple; cheeks rugose, but with no tubercle; front pair of tarsi, at any rate, scarcely more than half the width of the corresponding pair in *C. funebris*: medium-sized species *approximata*, Walk.

Cutiterebra detrudator, Clk.

Cuterebra detrudator, Clark, Addenda 1848, fig. 4; Brauer, Monographie der Cestriden, p. 245 (1863).

On examining the type (a female) of this species I found, to my intense surprise, that if my species *nigricincta* (Ann. & Mag. Nat. Hist. ser. 6, vol. xv. pp. 388-390) does not represent the other sex of this, it is, at any rate, very closely allied to it. Brauer did not know the species, and unfortunately his translation of the original description commences with a very serious blunder, which is entirely misleading. Clark himself makes a slip, but his meaning is clear enough; he writes, "Caedit (*sic*) maximis hujus generis," which Brauer renders by "Sehr grosse Art." As a matter of fact, although, as will be seen, the dimensions of Clark's type correspond very closely with those of the type of *nigricincta*, owing to the somewhat narrower abdomen the former looks considerably smaller, and it is certainly not even a large specimen of the genus. A copy of Clark's original description of *detrudator*, as well as of that of *atrox*, will be found below, and it will be seen that the former at any rate is too brief and inaccurate to be of any value; indeed, the species is quite unrecognizable from the description, but as I described the type of *nigricincta* very fully in my former paper, it will be sufficient now, after giving the dimensions of Clark's type, to point out in what respects it differs from mine.

C. detrudator, Clk.—Type a ♀. Length $19\frac{1}{3}$ millim.; width of vertex 3 millim.; width of head $8\frac{1}{3}$ millim.; width of thorax at base of wings $8\frac{1}{3}$ millim.; width of abdomen (second segment) $8\frac{2}{3}$ millim.; length of wing $15\frac{2}{3}$ millim.

Front nearly bare, with a somewhat shining elongate black area on each side, dark brown in the centre; above the *lunula frontalis* faintly suffused with pale golden pollen and with a little short pile of the same colour. *Thorax* with no golden pile on the anterior surface, and with only a small and inconspicuous group of such hairs in the median line near the anterior margin of the dorsum, instead of a conspicuous semi-lunar patch; but with a few golden hairs on either side of the median line in front of the scutellum. *Abdomen*: all the segments (including the fifth) metallic and bluish green instead of brassy green; pile clothing the third to the fifth segments sparser, and pale yellow instead of rich golden yellow; a much broader transverse band of black pile on the third segment, occupying very nearly the whole of the posterior half of the segment; hind margin of fourth segment also clothed with black pile on each side.

It will thus be seen that the most conspicuous differences between the type of *detrudator* and that of *nigricineta* are, in the case of the former, the narrower abdomen, the paler and thinner pile on the last three segments, the much broader black band on the third and the presence of black pile on each side of the hind margin of the fourth segment; and on the thorax the absence of golden pile on the anterior surface and the almost entire absence of any indication of a semi-lunar patch of similar pile on the anterior margin of the dorsum. The absence of golden pollen on the *front* of *detrudator* may be due to denudation, though the typical specimen, especially if we take its age into consideration, is in a good state of preservation. On the third and fourth segments of the abdomen there is a tapering band of greyish pollen on each side (most conspicuous when the specimen is viewed from behind), as in the type of *nigricineta*.

Although I think it quite possible, or even probable, that my *nigricineta* will eventually prove to be the male of *detrudator*, further material is imperatively necessary before the question can be decided with certainty. I therefore content myself for the present with having drawn attention to the differences between the typical specimens.

Before proceeding to give a reprint of the original descriptions of Bracy Clark's two species which are discussed above, it seems worth while to say a word or two as to the remarkable paper in which they appeared, as it is probable that very few living dipterists have ever seen a copy. The paper in question, quoted by Brauer as "Essay. Addenda . . . 1848," and by Hagen ('*Bibliotheca Entomologica*') as "Addenda 1848," is a single page of quarto size, printed only on one side of the paper, and headed with the title given to it by Hagen, without any stop between the word and the date. "Addenda 1848" is therefore its proper designation. The upper part of the page is devoted to a reprint of a "Note on the Bot infesting the Stag" [*Pharyngomyia picta*, Mg.], from '*Zoologist*,' 1847, pp. 1569-1570. This, as originally published, was signed "Bracy Clark," but no signature whatever appears on the "Addenda 1848;" so that for proof of authorship we have to depend upon internal evidence. Above the "Note" it is stated that:—"The following communication was sent by me to the '*Zoologist*' of my friend Edward Newman, No. 1, for January, for the year 1847;" and, as I have just stated, the note as originally published was signed. References to "our Monograph, 2nd Supplement," meaning, as pointed out by Westwood in a marginal manuscript note

on the Oxford copy before me, Clark's paper published in *Trans. Linn. Soc.* xix. pp. 81-94, and to "my 'Treatise' on this genus, pl. 1. fig. 40" (*i. e.* the "Essay on the Bots of Horses and other Animals"), also occur. At the top of the page are five woodcuts, three of which refer to *Pharyngomyia picta* (here called by Clark *Æstrus cervi*), but which are not the same as the three figures with which the "Note" as originally published in the 'Zoologist' is headed, while the other two represent the types of *Cutiterebra detrudator* and *C. atrox*. The latter figures are very bad, especially that of *C. detrudator*, which is not only valueless, but also misleading. The top right-hand corner of the Oxford copy bears the following in Westwood's handwriting:—"(Zool. 1847) and published separately by the Author for distributⁿ. with the additⁿ. of the 2 n. sp. from Mus. Westwood." This statement of Westwood's is supported by the fact that "Addenda 1848" is not contained in any of the following libraries: British Museum (W.C.), British Museum (Natural History), Royal College of Surgeons, Linnean Society, Zoological Society, and Entomological Society; while Messrs. Dulau and Co. endeavoured in vain to procure a copy for me. Under these circumstances it certainly appears to be open to question whether the descriptions of the two species of *Cutiterebra* which will be found below were ever published at all, in the proper sense of the term. Since, however, the names were accepted by Prof. Brauer in his Monograph, while, as I have mentioned above, the paper is quoted by Hagen, I do not propose to interfere with them. The descriptions of *C. detrudator* and *atrox* occupy the rest of the page beneath the "Note" &c., referred to above, and run exactly as follows:—

"*Detrudator*.—Cuterebra, nigra, holosericea, abdomine glabro caerulescenti nigro, lateribus albo bicingulatis, posticèque rufo.

"*Habitat* calidioribus Americis* (*sic*). Ex Musco Dom. Westwood. Vid. fig. 4.

"*Descr.* Caedit (*sic*) maximis hujus generis. Caput obtusum, vertice atro, inter oculos rufum, ore et inferne latè album hirsutum. Thorax ater holosericeus, infra insertiones alarum et subtus, albus. Halteres concavæ concolores, erectæ. Alae longiores aurulento-fuliginosæ. Abdomen lactè caeruleum ad latera cingulis duobus latis albis, apiceque hirsuto flavescenti rufo. Pedes omnino atri tarsis praelongis articulis sagittato-acutis.

* In the Oxford copy Westwood has struck out the words "calidioribus Americis," written a ? above "calidioribus," and "[? J. O. W.]" in the margin.

"*Atrox*.—Cut. atra, glabra, abdomine caerulescenti-atro marginibus segmentorum albis.

"Habitasse creditur in Africâ*, v. fig. 5. Ex Museo D. Westwood.

"*Descr.* Facile inter maximas hujus generis omninò atro caerulescens, lucidus. Thorax anticè scabriusculus, posticè glaber. Halteres scutellum circumcingentes, erectae, maximae. Alae parùm pucolatae (*sic*), obscurè aurulento, fuliginosae. Abdomen latum, obtusum, incurvatum, atro caeruleum incisurarum marginibus, albis. Ad latera et subtus albo latè conspersum. Pedes atri geniculis tiliarum extus albicantibus."

It will have been observed that in both the above descriptions Clark writes "halteres" for "alulæ."

Cutiterebra fontinella, Clark.

Cuterebra fontinella, Clark, Trans. Linn. Soc. xv. pp. 410, 411 (1827); Clark, Essay on the Bots of Horses and other Animals, pl. ii. fig. 23 (1815) [figure only]; Brauer, Monographie der Oestriden, p. 242 (1863) [translation of Clark's description]; (nec Townsend, Insect-Life, v. pp. 319, 320, 1893); Austen, Ann. & Mag. Nat. Hist. ser. 6, vol. xv. pp. 384-386 (1895) [*Cutiterebra*].

Cuterebra fontanella, Clark, Trans. Linn. Soc. xix. p. 88 (1845).

Cuterebra americana, Walker (nec Fabricius), List Dipt. &c. iii. p. 683 (1849).

The library of the Zoological Department of the British Museum contains two copies of Clark's "Essay on the Bots of Horses &c.," one with coloured, the other with uncoloured plates. The uncoloured copy contains two figures that are not included in the plates in the other, namely fig. 40, pl. i. and fig. 23, pl. ii.† On turning to the Oxford copy of the

* Westwood has struck out "Habitasse creditur in Africâ" in the Oxford copy, and written "[Habitat certe in Mexico. J. O. W.]" in the margin. As was stated in my former paper, *Cutiterebra* is confined to the Nearctic and Neotropical Regions. Prof. Brauer, in his Monograph, merely translates the descriptions of *atrox* and *detrudator*, as he did not know the species; but he gives the patria of *atrox* as "Mexico," and writes "Vaterland?" in place of that of *detrudator*, thus apparently having been informed of Westwood's emendations mentioned above. However, he goes on to state with reference to *C. detrudator* (p. 245):—"Clark vermuthet wohl irrthümlich, dass die Art aus Afrika stamme. Einer Mittheilung Westwood's zufolge hat Clark die Angaben über das Vorkommen bei dieser Art und der *Cut. atrox* verwechselt." But in applying Clark's statement as to the locality of *C. atrox* to *C. detrudator* Brauer himself has blundered. The type of *atrox* is labelled "Mexico," but that of *detrudator* bears no locality, unless it be an illegible word to which a note of interrogation is prefixed.

† Bracy Clark seems to have had a weakness for republishing his papers with alterations in the figures; cf. the instance of the figures to his "Note on the Bot infesting the Stag," mentioned in the remarks on the "Addenda 1848" above.

“Essay &c.,” which was kindly forwarded to me by Prof. Poulton for inspection with the “Addenda 1848,” I found that it has coloured plates, but that these correspond to the uncoloured ones in the British Museum copies, *i. e.* they possess the extra figures. In other respects the three copies of the “Essay &c.” before me appear to be identical, and there is no reference to the extra figures in any one of them. Fig. 40, pl. i., however, is referred to in *Trans. Linn. Soc.* xix. p. 92 (1845), and in the “Note &c.” in the “Addenda 1848,” and the references show that the figure in question is intended to represent *Pharyngomyia picta*, Mg. When writing my former paper I did not realize what fig. 23, pl. ii., in the uncoloured Museum copy was meant for; but on seeing the coloured figure in the Oxford copy I at once saw that it must be intended for *Cutiterebra fontinella*, Clk. This conclusion is confirmed by the reference on p. 88 of *Trans. Linn. Soc.* xix., quoted above, which I have recently come across; the passage in question is as follows:—“The above species described by Pallas [*i. e.* *Æstrus leporinus*, Pall.] is very nearly allied to, or the same with, my *C. fontanella* (*sic*), described in the *Linnean Transactions*, vol. xv. p. 410, and figured in my *Treatise* [*i. e.* ‘*Essay &c.*’], pl. ii. fig. 23.”* The figure places the specific identity of the three specimens in the British Museum collection, which I mentioned in my former paper, beyond doubt. The entire insect is shown in profile, with four visible segments in the abdomen, of which the last alone is yellowish white. Since the first abdominal segment in *Cutiterebra*, as in other genera of *Æstridæ*, is concealed by the scutellum, and practically invisible, the abdomen appears to be composed of only four segments, so that the last segment visible from above, which is apparently the fourth, is really the fifth. Clark’s figure, by showing the first three segments of the abdomen purplish, and only the last segment yellowish white, therefore makes it clear that in writing “*segmentis duobus postremis hirtis*” (which was my only reason for doubting that our specimens were really *fontinella*) the author either made a slip or else meant to refer to the small sixth segment as well as to the fifth, the former of which, though concealed beneath the latter, is actually also clothed with pale golden-yellowish pile. The discovery of the reference on p. 88 of *Trans. Linn. Soc.* xix. to fig. 23, pl. ii. of the “*Essay &c.*” therefore proves

* *Æstrus leporinus*, Pall., which Brauer (‘*Monographie*,’ pp. 145, 146) doubtfully assigns to the genus *Æstromyia*, is a species from the Altai Mountains, which is at once proved by its mouth-parts to be in no way related to *Cutiterebra*.

that the three female specimens mentioned on p. 384 of my former paper really belong to this species, but that those of Townsend must be referred to some other.

It is very desirable that the types of the other species of *Cutiterebra* described by Bracy Clark, if still in existence, should be subjected to a re-examination, although of the seven species described and figured by him the identity of all but *cuniculi* is now established. Of these species *C. purivora* (= *C. buccata*, Fab.) and *fontinella* were described from specimens in Clark's own collection; *cuniculi*, *horripilum*, and *cauterium* (= *americana*, Fab.) from specimens in the possession of John Francillon; while the types of *atrox* and *detrudator*, as already shown, formerly belonged to Westwood and are now preserved in the University Museum, Oxford. In all probability Clark was careless about his types, and had no idea of the value that nowadays is attached to typical specimens. At any rate in an original letter from Clark to Westwood, dated "7/11-42," which I have had the privilege of inspecting among the Oxford papers, and which is a response to a request from Westwood to be permitted to examine Clark's *Æstridæ*, Clark writes: "having given to one or another of my specimens I have but few left." Francillon's collection of insects was dispersed after the owner's death by the sale held at King's Sale Room, 38 King Street, Covent Garden, June 11-19, 1818. On p. 44 of the catalogue ("A Catalogue of the Very Superb and Celebrated Collection of Foreign Insects of the late John Francillon, Esq. &c. &c."), I find included two specimens each of *Cutiterebra cauterium* and *C. horripilum*, which were doubtless the types. It may be worth while to add that on the previous page one specimen of *Æstrus phobifer*, Clk., is mentioned; and as Clark states in his description that the species was contained in the collection of his friend Francillon, this is no doubt likewise a type. I mention these particulars in the faint hope that the missing types may still be in existence, and that these lines may be read by someone into whose hands they have come. If so, I need hardly add that I should be extremely grateful if the fortunate possessor would communicate with me.

In conclusion, I would point out that in characterizing the larva of *Cutiterebra* as being "quite thickly beset with variously shaped pointed spines and thorns" (Wien. ent. Z. vi. p. 11) Prof. Brauer is in error. The pupa-cases of

C. funebris, Austen, and the two specimens referred by Van der Wulp ('*Biologia Centrali-Americana*, Diptera, vol. ii. p. 1) to *C. emasculator*, Fitch, but which appear to me undoubtedly to belong to *C. analis*, Meq. (? is *C. emasculator*, Fitch, merely a synonym of *C. analis*, Meq.?), besides Fitch's description ('*Third Report on the Noxious, Beneficial, and other Insects of the State of New York*, p. 162, 1859) of the larvæ of his species, prove beyond doubt that the external covering of the larva of *Cutiterebra* consists, not of spines or thorns, but of imbricated scales.

XX.—A new Pupoid Type of Helicidæ.

By HENRY A PILSBRY.

IN the '*Archiv für Naturgeschichte*' for the present year, at p. 103, the distinguished malacologist of Berlin, Dr. Eduard von Martens, has given a *résumé* of previous knowledge of the geographic distribution and systematic position of the curious Austrian land-mollusk known as *Pupa obtusa*, Drap., *Bulimus obtusus* of authors. To this he adds several new localities, and, best of all, an account of the soft anatomy of the creature, hitherto quite unknown. Figures of the genitalia, jaw, and dentition are given, from dissections by Mr. A. Protz.

The species under consideration has a cylindrical shell, of equal diameter at the two ends, which are blunt and rounded; and it is of rather chalky texture. In placing it in the genus *Pupa* Draparnaud approximated as nearly to the true position of the animal as was possible to a naturalist of his time. In 1833 Fitzinger, who was, it is well known, a terrible splitter of genera, made a new one—*Cylindrus*—for this species, but without characterizing it. Albers, in '*Die Heliceen*,' places *Cylindrus* in the genus *Bulimus*, between the group of *Buliminus montanus* and that of *B. detritus*. This would be thought an excellent estimate from shell-characters alone. *Cylindrus* is rather less happily grouped in the second edition of Albers's work by Dr. E. von Martens, where it is placed in *Pupa* between the subgenera *Leucochila* and *Faula*.

In the paper now before us Dr. von Martens considers *Cylindrus* of generic rank; but he expresses no opinion upon the family position of the genus or upon its relationships with other genera of land-snails. It remains for me, therefore, to indicate the systematic position and affinities of this interesting form.